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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,471	11/12/2003	Liang A. Xue	H0003450	9413

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EXAMINER	
VORTMAN, ANATOLY	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/712,471	XUE ET AL.	
	Examiner	Art Unit	
	Anatoly Vortman	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2005 (Election)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) *5,9-12,15,16,21,25-28,31 and 32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-8,13,14,17-20,22-24,29 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/12/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 5, 9-12, 15, 16, 21, 25-28, 31, and 32 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/21/05. Office action on elected claims 1-4, 6-8, 13, 14, 17-20, 22-24, 29, and 30 follows:

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 6-8, and 13, are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US/5,651,414 to Suzuki et al., (Suzuki).

Regarding claims 1 and 13, Suzuki disclosed (Fig. 1, 25, and 26) a passive thermal switch assembly, comprising: a heat pipe (1a, 1b) having an evaporator end (mounted within member (3), column 6, lines 15-17) and a condenser end (the end opposite to the evaporator end); and a switch (2a, 9) coupled to the heat pipe condenser end (column 6, lines 32-34), the switch

comprised at least partially of a shape memory alloy material having a shape or volume that varies with temperature (column 12, lines 47-52).

Regarding claim 2, Suzuki disclosed (Fig. 26) a first thermally conductive contact (2a) coupled to the heat pipe condenser end; and a second thermally conductive contact (9) disposed proximate the first thermally conductive contact (2a).

Regarding claim 3, Suzuki disclosed (Fig. 26) that the first and second thermally conductive contacts (2a, 9) are selectively thermally coupled (Fig. 26) and thermally decoupled (Fig. 25) from one another in response to variations in temperature of either or both of the contacts.

Regarding claim 4, Suzuki disclosed (Fig. 26) that the first and second thermally conductive contacts (2a, 9) at least partially engage one another when at least a portion of the first thermally conductive contact reaches a predetermined temperature (column 12, lines 58+).

Regarding claims 6-8, Suzuki disclosed that the first thermally conductive contact (2a) is comprised of a non-shape memory metal and the second thermally conductive contact (9) is comprised of a shape memory metal or shape memory metal alloy (column 12, lines 47+), and is disposed adjacent the first thermally conductive contact (2a) (Fig. 26), wherein the first and second thermally conductive contacts (2a, 9) are selectively thermally coupled (Fig. 26) and thermally decoupled (Fig. 25) from one another in response to variations in temperature of either or both of the contacts, and the first and second thermally conductive contacts (2a, 9) at least partially engage one another when at least a portion of the first thermally conductive contact reaches a predetermined temperature (column 12, lines 58+).

4. Claims 17- 20, 22-24, and 29, are rejected under 35 U.S.C. 102(a) as being anticipated by US/6,608,752 to Morris et al., (Morris).

Regarding claims 17 and 29, Morris disclosed (Fig. 1, 2, 4, 5) an electronic equipment enclosure (12), comprising: a chassis (18); one or more circuit components (14) housed within the chassis (18); one or more heat pipes (60) each having an evaporator end (receiving heat (70)) and a condenser end (releasing heat (71)), each heat pipe evaporator end coupled to at least one of the circuit components (14); and one or more switches (68) coupled to each heat pipe condenser end (the end of the heat pipe with the fins (68) constitutes a first thermally conductive contact of the switch)), each switch comprised at least partially of a shape memory alloy material (column 2, lines 23+) having a shape or volume that varies with temperature and disposed adjacent the chassis (column 2, lines 49+), whereby each switch is selectively thermally coupled (Fig. 2) to, and thermally decoupled (Fig. 1) from the chassis (18) at a predetermined temperature (column 2, lines 13-20).

Regarding claim 18, Morris disclosed a first thermally conductive contact (68) coupled to the heat pipe condenser end; and a second thermally conductive contact (the chassis (18)) disposed proximate the first thermally conductive contact (68).

Regarding claim 19, Morris disclosed that the first and second thermally conductive contacts (68, 18) are selectively thermally coupled (Fig. 2) and thermally decoupled (Fig. 1) from one another in response to variations in temperature of either or both of the contacts.

Regarding claim 20, Morris disclosed that the first and second thermally conductive contacts (68, 18) at least partially engage one another when at least a portion of the first thermally conductive contact reaches a predetermined temperature (Fig. 2).

Regarding claims 22-24, Morris disclosed that one thermally conductive contact (18) is comprised of a non-shape memory metal and another thermally conductive contact (68) is comprised of a shape memory metal or shape memory metal alloy (column 2, lines 23+), and is disposed adjacent the first thermally conductive contact (Fig. 1, 2), wherein the first and second thermally conductive contacts are selectively thermally coupled (Fig. 2) and thermally decoupled (Fig. 1) from one another in response to variations in temperature of either or both of the contacts and the first and second thermally conductive contacts at least partially engage one another (Fig. 2) when at least a portion of the first thermally conductive contact reaches a predetermined temperature (column 2, lines 13-20).

5. Alternatively, claims 1-4, 6-8, and 13, are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP/09-134,653 to Hasegawa et al.

Hasegawa et al. teaches (Fig. 1, 2) a passive thermal switch assembly, comprising: a heat pipe (3) having an evaporator end (3a) and a condenser end (3b), a switch (1a, 1b) coupled to the heat pipe condenser end (3b), the switch comprised at least partially (1a) of a shape memory alloy material having a shape or volume that varies with temperature (see translated abstract).

6. Yet alternatively, claims 1-4, 6-8, and 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP/62-46273 to Ono.

Ono teaches (Fig. 1, 2) a passive thermal switch assembly, comprising: a heat pipe (21) having an evaporator end and a condenser end, a switch (22) coupled to the heat pipe condenser

end, the switch comprised at least partially of a shape memory alloy material having a shape or volume that varies with temperature (see translated abstract).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 14 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Suzuki or Morris, each taken alone.

Either Suzuki or Morris teach all as apply to claims 13 and 29, respectively, but that the shape memory alloy is selected from the group consisting of nickel-titanium, copper-zinc-aluminum, and iron-manganese-silicon. All of the aforementioned materials have been notoriously **known** to have shape memory properties and have been widely used in the cooling and switch arts at the time the invention was made for making various thermally responsive components. Therefore, it would have been obvious to a person of ordinary skill in the relevant art at the time the invention was made to select any suitable shape memory alloy material for making switch components of either Suzuki or Morris, including as claimed, since it has been held to be within the general skill of a worker in the art to select a **known** material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure:

US/5022462, WO/99/04429, JP/07-254672, JP/2001-263971, JP/60-30994, JP/63-243690, and JP/64-74799 disclosed various cooling arrangements comprising either or both: the heat pipes and / or shape memory members.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 571-272-2047. The examiner can normally be reached on Monday-Friday, between 10:00 am and 6:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Lynn Feild can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anatoly Vortman
Primary Examiner
Art Unit 2835

AV